Meeting New England's Renewable Energy Targets

A Practical Three-Step Plan

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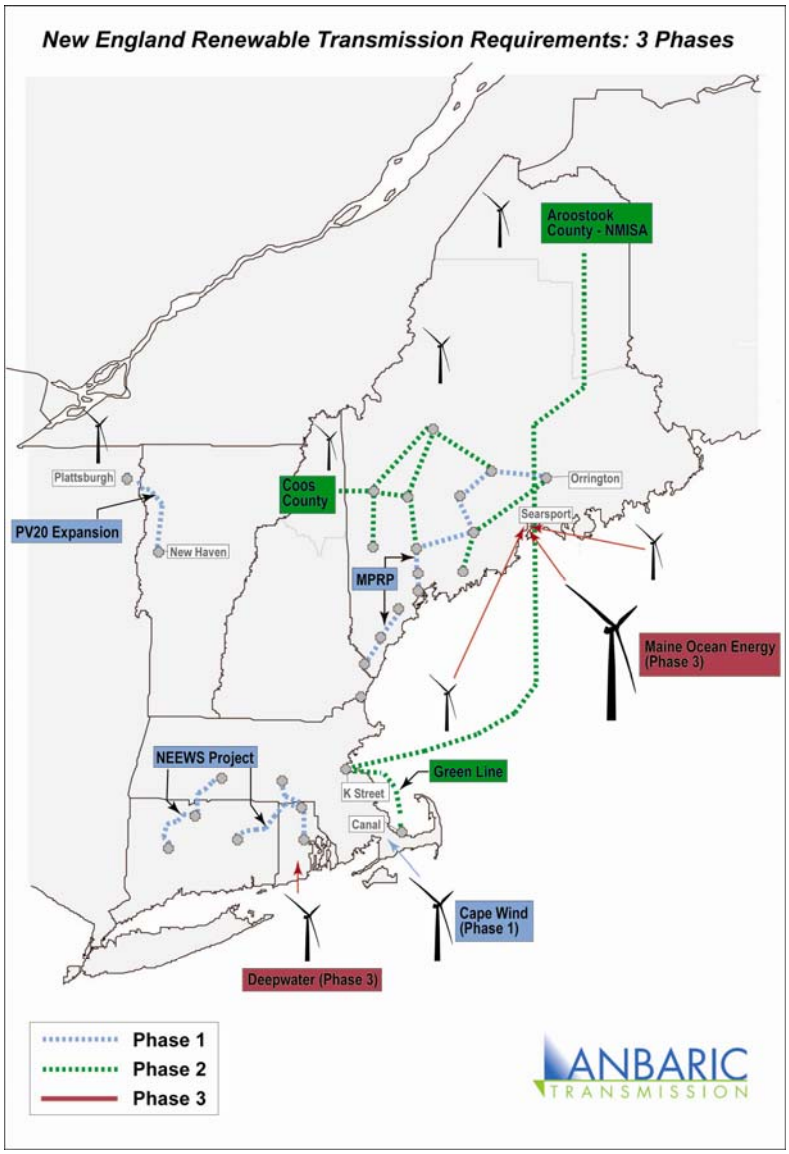
(revised October 2009)



Meeting New England's Renewable Energy Targets

Every state in New England is now committed to increasing the percentage of electricity it gets from renewable generating resources in the coming 20 years.[1] The new targets in Massachusetts, for example, increase the percentage of electricity that must be generated by renewables from 3 percent in 2007 to 25 percent in 2030. In May 2009, the House of Representatives passed a bill that would create a national "Renewable Portfolio Standard" (RPS), equivalent to 20 percent of total electric demand.[2] If these targets were met, they would greatly improve New England's contributions to dealing with global warming. For proponents of aggressive action to combat climate change, however, the "if" in the previous sentence is a bright red flag: is it possible that New England might fail to meet these ambitious targets?

Unfortunately, the answer is a resounding "YES." The Cape Wind project – stalled for years – is the most visible evidence of how monumental a task we face to meet our regional goals. The truth is that the scale of our renewable ambitions is so large that, even after unprecedented reductions in demand through energy efficiency, New England will still need dozens of projects on the scale of Cape Wind, whether they are wind (which is likely to make the largest contribution), solar, tidal or biomass to meet the target.[3]

Are we on the right track, or is New England like the proverbial dieter who wants to lose a lot of weight but has no plan to get there? This White Paper puts forward a 3-phase elaboration of a blueprint set forth by the Governors of the Eastern states in which renewable generation and transmission development can lead to the goals we have already set, under our current operating constraints (including developing as little transmission as possible). It briefly reviews the challenges created by the forthcoming increase in demand for renewables. It takes account of the fact that renewables do not need to come just from New England. They may also be acquired from neighboring electricity control areas.

Renewable Demand and Supply: New England

Based on the expected new Federal RPS requirement (15 percent) for New England states, the region's demand for renewable electricity will increase from 7 million MWhs in 2008, to 13 million MWhs in

[1] For a review of those requirements, see. http://www.pewclimate.org/states-regions

[2] At the time of writing (Mid-May, 2009), the specifics of the Federal RPS requirements were not yet available.

[3] Even the National Renewable Energy Lab (NREL) is pessimistic about New England's renewable picture: "…renewable energy deficits are projected for New England, New York, and the Mid-Atlantic areas, with notable surpluses in the Midwest, the Heartland, Texas, and the West." See Bird, L. et al. "An Examination of the Regional Supply and Demand Balance for Renewable Electricity in the United States through 2015." Technical Report NREL/TP-6A2-45041, National Renewable Energy Laboratories, 2009. http://www.nrel.gov/docs/fy09osti/45041.pdf (accessed May 13, 2009).

2015, and 22 million in 2020.[4] The terrestrial renewable capacity in southern New England can make only a small contribution to this 15 million MWh incremental need. The bulk of the new supply, therefore, will have to come from northern New England, adjacent control areas, and offshore wind.

The sheer size of the gap allows us to make an important observation: if the 15 million MWh need forecast for the year 2020 had to be met by additional wind projects, it would require the construction of approximately 4,800MW of wind capacity, or twelve Cape Wind projects.[5] Cape Wind, as we all know, is nearing a decade of development, and still has not begun construction!

The large, looming gap between the demand for and the supply of renewable energy must be filled by renewable energy produced in places where such production is possible. In the Northeast, those places are found in (a) New Hampshire, Maine, and the adjacent electric control areas, and (b) offshore.[6] Aside from large-scale Canadian hydro (a supply that does not qualify as "renewable" under the New England states regulatory rules), the most promising source of large-scale renewables, for now, is in the form of wind energy. We will need both northern terrestrial and offshore resources, and the requisite transmission to bring them to market.

For most of us, under the regulations we have established in New England, we will have to pay a stiff penalty to state governments for each megawatt-hour by which the utility that serves us falls short of its renewable energy requirement. As the years go by, the potential deficit gets larger and larger as the required percent of total demand that must be met with renewables rises. The potential penalty electricity consumers will have to pay could reach hundreds of millions of dollars.[7]

Needless to say, these potential liabilities put our utilities, as well as entities that buy directly from the Grid instead of from a utility, in a tough position. What if the market does not develop enough renewable energy? There is more and more evidence that transmission constraints, and the sheer

[4] In a presentation to the ISO-NE Planning Advisory Committee, the ISO-NE reported the 2009 Load Forecast at 131,315 GWh rising to 145,310 by 2020. New England generators produced 7,000 GWhs of renewable energy in 2008 according to the Capacity, Energy and Loads data for that year (excluding hydro resources). Twenty-two thousand GWhs of renewable energy will be needed in 2020 in order for New England to meet the 15% RPS.

[5] 15 million MWhs of renewable capacity would require, at a 35 percent capacity factor, 4,800MWs of wind capacity. Cape Wind is a 420MW project.

[6] A quirk in the regulations allows the southern New England states to satisfy their requirements by "buying RECs" from New York, northern New England, New York, and Canada. There is a constructive spirit to this allowance: it might lead to the development of a very large renewables industry in those areas. But this scenario runs into a very concrete and practical issue: it is impossible to build 7,000MW of wind capacity in an area without also building the transmission capacity to take it out of that area. Put another way, simply "buying RECs" will work up to a point, but it quickly becomes necessary to move the energy – inconvenient as that may be – from where it is produced to the area where it is consumed.

[7] The mechanism whereby we would have to pay these penalties is the "Alternative Compliance Payment" (ACP). According to a study by Energy Security Analysis, Inc. Massachusetts ratepayers will carry the burden of $750 million in Alternative Compliance Payments by 2020 at the current rate of renewable energy production in New England. Connecticut ratepayers can expect to pay as well. With a limited supply of renewable energy available in New England, Massachusetts will purchase more RECs than Connecticut, since the cost of non-compliance is higher in Massachusetts. See Appendix for a complete analysis of Alternative Compliance Payments.

difficulty of building acceptable new transmission, are seriously slowing down the development of renewables. That creates a conundrum: electric transmission projects are so difficult to build that any substantial project begun today will come into service by 2013, at the earliest. We have taken the first step – a large commitment to renewables. Now comes the hard part: building the transmission that will allow us to meet our commitments by connecting load to where the renewable resources are located.

"The Plan" vs. "Planning" to Allow Transmission to Enable Renewables

To make the obvious plain, we need multiple new wind and renewable energy projects to be built throughout New England. To open up these resources, New England -- like the states that have taken the lead in addressing climate change, such as California, Colorado, and Texas -- needs to do some planning. The outlines of how to do such planning began to emerge in the Spring of 2009 from federal legislative initiatives on how to achieve national carbon reductions, and from associated conversations among and between governors of Eastern states.

Federal legislation and state initiatives properly place energy efficiency and conservation first as the most cost effective priority. While we must become more energy efficient, needed improvements to our electric grid cannot be ignored. There are also indications that the electric Grid will be asked to do more in the future, such as heat homes (under discussion in Maine), and power automobiles (with plug-in hybrids one of the hottest topics in policy discussions). This potential makes it extraordinarily difficult to assume electric demand will go down even as we become more efficient. "The Plan" is unlikely to give us clear instructions on these seminal questions anytime in the near future.

We must, therefore, intensify development of renewable energy resources and our electric grid to meet the complex demands of our energy future. While it was fashionable in the recent past to say "the market" would provide solutions, we are now clearly more oriented toward a planning approach to acquire resources , with federal and state initiatives aimed at inserting what is being called "policy energy" (as opposed to "market energy") into the supply mix. To that end, an indication of what policies the Eastern Governors intend to pursue began to emerge in the spring of 2009. As a first step, ISO-NE and the NYISO withdrew from the "Joint Coordinated System Plan," which appeared to advocate for a huge multi-state, multi-billion dollar transmission system that would deliver wind energy from the Midwest to the East.[8] The Northeast recognized that there are significant renewable resources located closer to home. Shortly after, the New England Governors requested assistance from ISO-NE to help develop a "blueprint" for the New England region. That initiative was further expanded in a letter that ten Eastern State Governors wrote to the Congressional leadership on May 4, 2009[9] in reaction to reports that federal policy makers were contemplating a "coast to coast" electricity transmission system to bring power from the Midwest to the East.

> "In addition to recognizing the potential for wind resources in the Midwest, we believe that the wind resources of the Eastern seaboard states - both onshore and offshore wind - represent one of our nation's

[8] Brief footnote describing the JCSP

[9] Massachusetts, New Hampshire, Rhode Island, Delaware, Maine, Maryland, New Jersey, New York, Vermont, Virginia.

most promising yet underdeveloped source *[sic]* of renewable energy. At the same time, we must express our concern about the significant risks posed by recent proposals regarding transmission that we believe could jeopardize our states' efforts to develop wind resources and inject federal jurisdiction into an area traditionally handled by states and regions.

Significant onshore or offshore wind projects have been proposed or planned for almost all of the Northeast and Mid-Atlantic states. Several of our states already have significant land-based wind projects installed or well underway and have established aggressive wind development goals. Moreover, the waters adjacent to the East Coast hold potential for developing some of the most robust wind energy resources in the world - enough wind potential to meet total U.S. electricity demand, as Interior Secretary Ken Salazar has recently pointed out. Congress should put its full support behind the development of these resources.

Current legislative proposals focused on transmission, in contrast, would designate national corridors for transmission of electricity from the Midwest to the East Coast, with the costs for that transmission allocated to all customers. While we support the development of wind resources for the United States wherever they exist, this ratepayer-funded revenue guarantee for land-based wind and other generation resources in the Great Plains would have significant, negative consequences for our region: it would hinder our efforts to meet regional renewable energy goals with regional resources and would establish financial conditions in our electricity markets that would impede development of the vast wind resources onshore and just off our shores for decades to come. In addition, the legislative proposals for selective federal subsidy for certain land-based wind resources paired with the practice of dispatching the lowest cost available generation resource could result in surplus transmission capacity or artificially inflated energy prices for Midwest renewables being paid by east coast ratepayers. Such an outcome would have negative consequences for consumers, regional energy sufficiency and the environment. Moreover, it is well accepted that local generation is more responsive and effective in solving reliability issues than long distance energy inputs."[10]

The Governors' letter notes that "Land-based wind energy projects, which have already proven themselves economical in the Northeast, must have the chance to move forward," and calls for "a new offshore wind transmission backbone to facilitate the interconnection of offshore renewable energy resources to major load centers along the East Coast."

The Governors' letter provides the beginning of a blueprint for renewable energy development in New England. It is essentially, a call to develop regional resources both for the sake of meeting environmental objectives and stimulating the economy with renewable energy industries in New England, New York, and other states. It is not surprising, given the economic challenges of the day, that the Governors (not to mention the President) are focused on projects that have this double benefit.

To that end, there is now a blueprint that assumes ***nearby*** resources are more cost-effective and provide employment and economic development benefits[11]. Taken to an extreme (for example, applied only to a single New England state), this position would run the risk of being protectionist and mercantilistic.[12] Applied to the entire East Coast, however, the selection of regional renewable

[10] See Appendix for the full letter.

[11] The New England Governor's Blueprint was released September 15, 2009. It and related studies may be accessed at http://www.nescoe.com/Blueprint.html.

[12] As discussed, for example, in Edward N. Krapels, "Environmental Mercantilism: How Not to Meet America's Renewable Energy Targets," *Electricity Journal*, Vol. 22, Issue 3, April 2009, pp. 13-16.

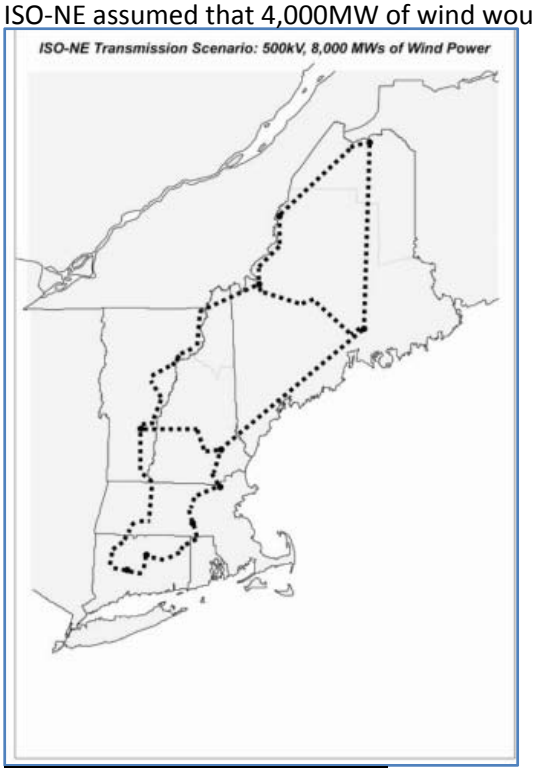
resources is likely to emerge as the most cost-effective way to meet the renewable standards that most coastal states have already committed themselves to, a commitment likely to be reinforced by both new federal RPS and carbon requirements.

The State of the Debate Circa September 2009: Central Planning *Redux?*

In New England, the Governors asked the ISO-NE to describe various scenarios for transmission development whereby the region could achieve different levels of renewables penetration. On July 17, 2009, ISO-NE released a draft blueprint for renewable development in New England that included six scenarios and two specific transmission lines to Canada. The six scenarios were distinguished by (a) the desired number of renewable MWs the transmission lines might enable (from 2,000 to 12,000MW), and (b) various on-shore vs. off-shore configurations. The scenarios were based on ISO-NE's views on potential wind project developments across New England.

State	MW On Land (4,000MW)	MW Off Shore (4,000MW)
Connecticut	0	0
Maine	2,500	1,340
Massachusetts	500	1,330
New Hampshire	600	0
Rhode Island	50	1,330
Vermont	350	0

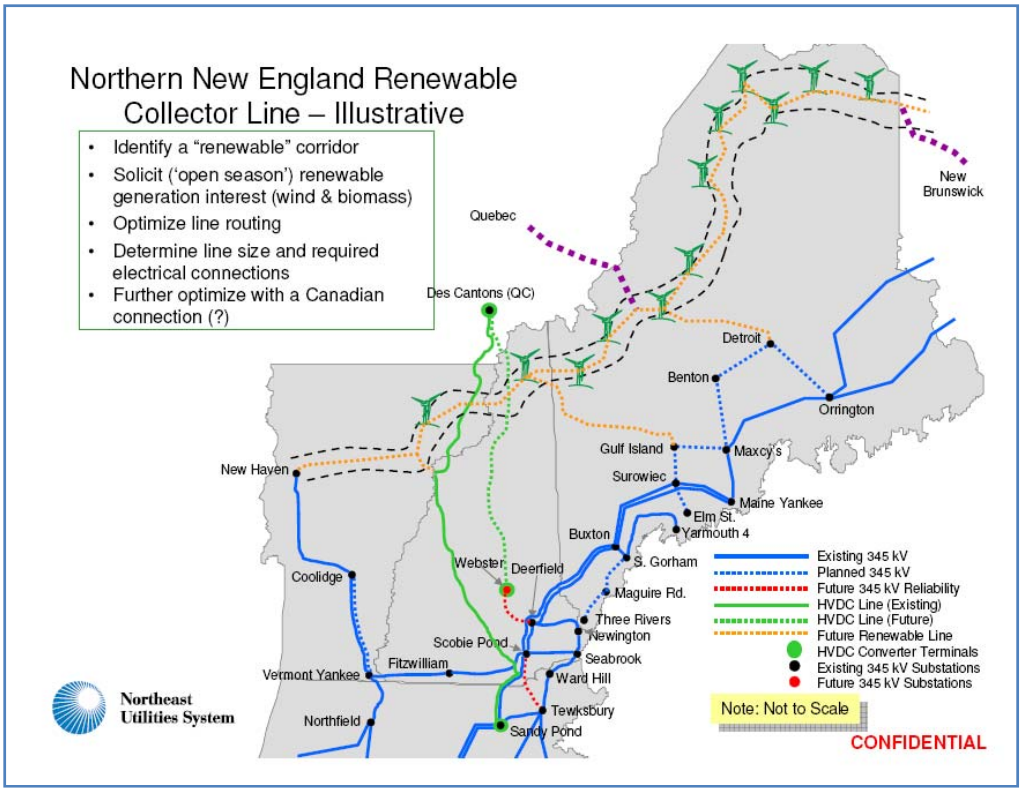
The scenario that best fits New England's need for renewables (as described in our analysis above) is the ISO's "8,000MW Wind Scenario." In this scenario, ISO-NE assumed that 4,000MW of wind would be harvested from onshore facilities, and 4,000MW from offshore facilities.



As shown in the map on the left, to accomplish the task of connecting these 8,000MW to load centers, ISO-NE shows a scenario requiring 4,320 miles of new transmission, circumnavigating New England. At 500kV, the system would cost between $13.4 and $22.4 billion (or $1,675 to $2,800/kw). At 765kV, it would cost between $17.3 and $28.9 billion (or $2,163 to $3,612/kw). That range ($1,675 - $3,612 per kilowatt) is a useful benchmark for the cost of transmission expansion to enable renewables.

In New England, Northeast Utilities has been the most prominent advocate of a "master plan" to build a transmission system resembling the 8,000MW scenario of ISO-NE.[13] NU describes a "collector line" aimed at harvesting renewables in northern New England possibly

[13] See James Robb, "Unlocking the Renewable Resource Potential of New England," presented to the New England Environmental Business Council, April 2009. Downloaded on Jul 24, 2009 from http://www.ebcne.org/fileadmin/pres/James_Robb.pdf.



supplemented by additional connections to Canada (see chart on the left).

The question for Governors, regulators and stakeholders of New England is now whether this "master plan" is the right investment to create a platform for renewable development.

…. Or, Incremental Development

The Chairman of the Massachusetts Department of Public Utilities, Paul Hibbard, has described a totally different model for developing transmission and renewables in New England. In testimony before the U.S. House of Representative in June 2009 Hibbard stated:

> "[W]e believe that renewable resources steered to market need to be those that are lowest cost, as determined by testing all options within a competitive market framework, one that operates subject to legislated emission caps and renewable resource floors. I want to be clear; the Commonwealth of Massachusetts recognizes that our need to address the carbon challenge is paramount; but we will fail in this challenge if the path we choose to do so abandons the free market principles that we rely on to maintain steady downward pressure on costs and upward support for technological innovation. FERC's reliance on competition in wholesale electricity markets as a de-facto determination that wholesale rates are just and reasonable is a lynchpin of these principles in their application to wholesale electricity markets across the country, and deviation from competition will come at a great cost to our nation's electricity consumers."[14]

He then goes on to propose a competitive framework for transmission:

[14] Testimony before the U.S. House Committee on Energy and Commerce's Subcommittee on Energy and Environment on June 12, 2009.

> "[F]ull internalization of all development costs, *including the cost to transmit power reliably to load*. This last point is fundamental to the efficient operation of free and competitive markets, placing all competing entities on an equal footing, and removing development risks from captive ratepayers, and placing it with the development and financial communities – precisely the entities most able to manage such risks over time."

Chairman Hibbard proposes that transmission solutions should be determined, not entirely by committees of experts trying to forecast 20 years into the future, but also by a more modest and manageable process. Referring to the potentially chilling effects of subsidized transmission lines on New England's offshore wind potential, Hibbard stated:

> "Given the sheer magnitude of this resource potential so close to our nation's major load centers, and the opportunity to have it developed *incrementally*, disbursed geographically, and through many different interconnections along the coast (improving power system reliability), we would miss an enormous opportunity to not focus aggressively on its development, and we would be making a grave mistake to preclude its development by overwhelming local markets with a high volume of power from distant generation sources."

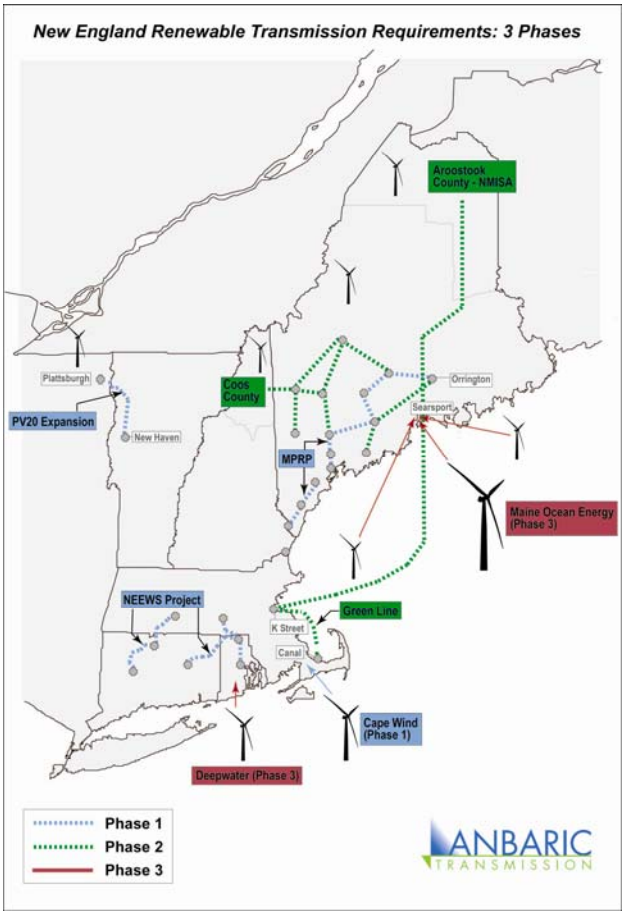
Chairman Hibbard's emphasis on developing renewables in a more incremental way makes sense. The risk of incurring billions of dollars of stranded cost from developing transmission lines to places that may ultimately not be able or willing to host huge renewables projects. While "planning" is vital, the incremental approach allows communities that are willing and able to host large renewables projects to team up with wind and transmission developers that can present "all in," delivered energy proposals to load serving entities and others representing New England electric customers. And, this can be done in a step-by-step and competitive process that is far more likely to elicit innovative and disciplined development.

A Blueprint for Sound Planning and Executable Projects

New England has made great progress in the last six months. The Governors Letter outlined their priorities for renewable energy development within the Region and the New England Governors Blueprint studied the scale of projects we would need to reach our renewable goals with regional resources. ISO-NE has provided some scenarios for planning toward this model. The next step is not to create a "Master Plan" but to do enough planning to enable executable, incremental, and smart projects to come forward. Time is not our friend, because it takes at least 5 years to complete major renewable energy projects (on or offshore) and the associated transmission. Under these scheduling realities New England will have to change how it conducts business in the highly-regulated and complex electricity sector if it wants to meet RPS goals. To paraphrase a philosopher of the late 20th Century – Pogo – we should not start this vast project with half-vast ideas. Instead, we should unleash the creative energies of our most innovative businesses by *encouraging them to compete* to provide New England with affordable, clean energy.

To provide for 15 million MWh of renewable supply by 2020, and given how long it takes to develop both renewables and transmission (any project starting now will not be in service until 2013), we need to develop practical, "bottom up" ways to implement the vision that the Eastern Governors have put forward. We believe the first three million MWh of renewables are already in view, and that a practical three-phase sequence of development of both renewables and transmission is in our grasp.

1. **Phase 1:** *Projects that could come into service between now and the end of 2011*.



Phase 1 includes projects already in an advanced state of development or of study. They include several transmission projects that will materially enhance the ability of the Grid to move renewables into the market: the Maine Power Reliability Project (MPRP), the New England East West Solution project (NEEWS), and the Champlain Wind Link (an expansion of the connection between northern Vermont and northern New York)[15]. Each of these projects will be able to move hundreds of MWs of the most economic regional wind resources from relatively remote areas to the market. In addition, Phase 1 should include the Cape Wind project, which has obtained most, if not all, of its permits and will break the ice for offshore wind development in the U.S. Collectively, these projects enhance the ability of roughly 1,000MWs of renewables (already built or with all their permits in hand) to enter the heart of the New England market. At the relevant capacity factors for the various renewable resources (typically wind), this 1,000MWs of capacity translates into roughly 3 million MWhs of renewable energy per year.

2. **Phase 2:** *Projects that could come into service between now and the end of 2013*.

   Phase 2 includes projects that bring the next 1,000+ MWs of power from the North to the market. There is a competitive issue as to whether that should be power from Quebec (as

[15] Under New England ISO rules, renewable energy imported from outside the RTO needs to have firm transmission capacity. This requirement has kept REC prices high in New England and substantiates the need for additional transmission capacity between upstate New York and New England. See, *inter alia,* Cory, K.S., and B.G. Swezey. "Renewable Portfolio Standards in the States: Balancing Goals and Implementation Strategies." *Technical Report NREL/TP-670-41409, National Renewable Energy Laboratory,* 2007. http://www.nrel.gov/docs/fy08osti/41409.pdf (accessed May 14, 2009).

proposed by a consortium including Hydro Quebec, Northeast Utilities, and NStar), or a transmission line (such as the one proposed by Anbaric and shown on the map as the "Green Line" that brings power from Maine and the Maritimes into southern New England). Again, at the relevant capacity factors for the various renewable resources (typically wind) this 1,000MWs of capacity translates into roughly 3 million MWhs of renewable energy per year.

3. **Phase 3:** *Projects that could come into service after 2013*.

   Phase 3 entails the development of several thousand MWs of offshore wind via a coordinated series of offshore developments. In our vision, offshore wind provides a virtually limitless renewable resource, but one that we need some years to mobilize.[16] We see offshore wind as the technology that provides the renewable energy needed starting in 2015 and beyond. The availability of the terrestrial renewables developed in Phases 1 and 2 provides the bridge, so to speak, to a longer-term development of potentially thousands of MWs of offshore wind.

Not only will development of these renewable resources help meet our RPS goals, they will also provide thousands of jobs and substantial economic development opportunities for all states on the East Coast. While some may label the idea of "renewable job creation" as political rhetoric, Germany currently gets 10% of its electricity from renewable sources, and that, until very recently, led the world in terms of installed capacity for wind generation. For the period 2004-2008, renewable energy accounted for the creation of 120,000 jobs in Germany.[17] Using that figure as a model, and adjusting for the population of New England, we could expect the creation of around 7,000 jobs anually in the region. Deepwater Wind's recent announcement that it would invest approximately $1.5 billion to construct a turbine support tower manufacturing facility in Quonset, Rhode Island is representative of the potential boost in economic activity. This regional manufacturing facility would create 800 direct jobs with annual wages of $60 million and manufacture structures to serve the entire Northeast.[18] Developing 2,000 MW of wind generation in Maine would create 5,200 jobs during construction and add more than 800 permanent jobs, estimated conservatively. The development represents an investment of $2.6 billion with annual benefits of to the local economy of $35 million, including $8 million in annual local tax revenue. [19]

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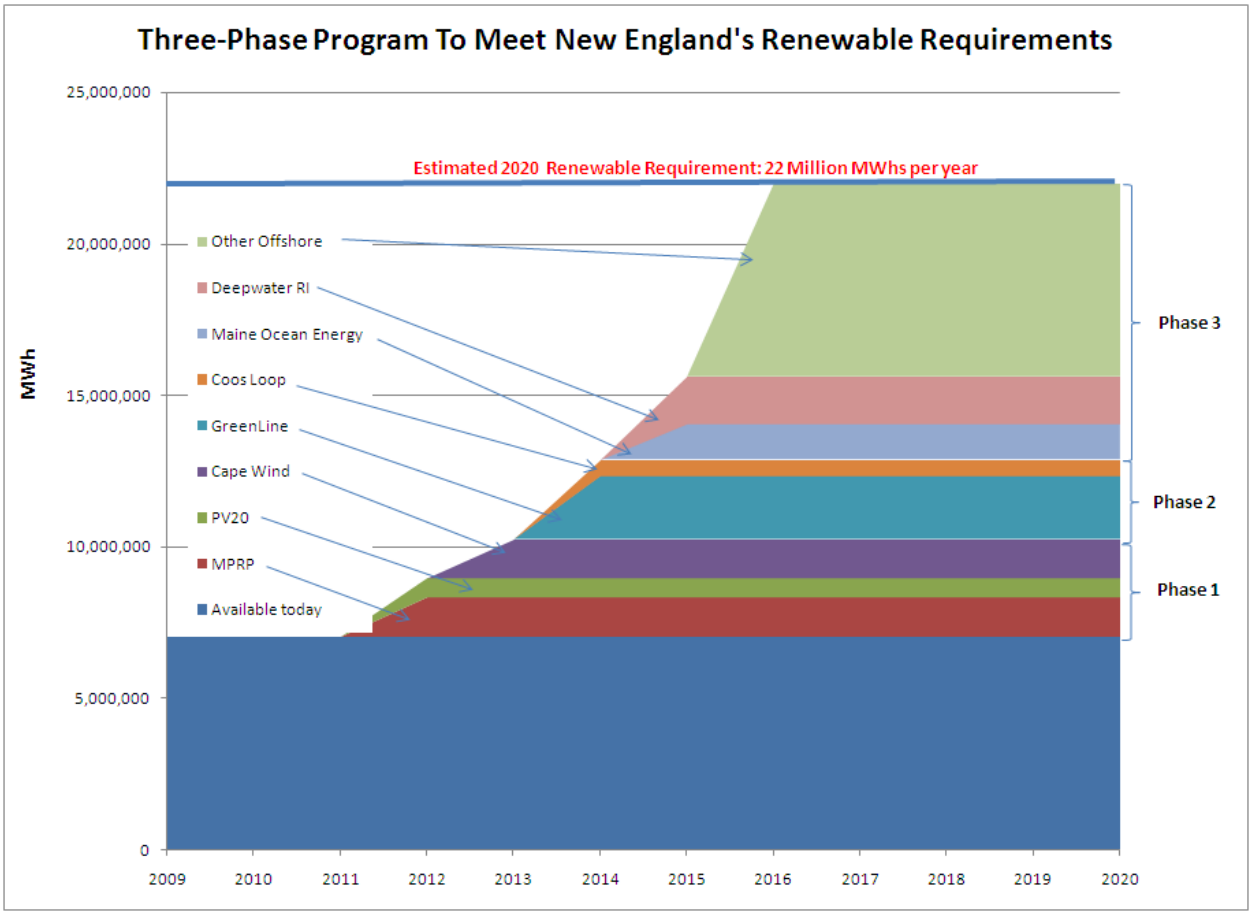
[16] The National Renewable Energy Lab has identified more than 1,000 GW of wind potential off the Atlantic Coast. The Lab estimates that the class 5 wind potential off the coasts of the lower 48 states exceeds the entire U.S. electricity demand. Currently, there are more than 2,000 megawatts of offshore wind projects proposed in the United States. "Secretary Salazar: U.S. Offshore Wind Resources Could Lead America's Clean-Energy Revolution". News Release, US Department of Interior. Aprill 2, 2009.

[17] For more on renewable labor economics in Germany, see, inter alia, Marlene O'Sullivan, Dietmar Edler, Marion Ottmüller, Ulrike Lehr, "Short and Long Term Impacts of the Expansion of Renewable Energy on the German Labor Market, Second Report on Gross Employment, March 6, 2009 (A report from the German Ministry of the Environment, Conservation, and Nuclear Security). (Accessed May 15th, 2009). http://www.bmu.de/files/english/pdf/application/pdf/ee_bruttobeschaeftigung_08_en_bf.pdf

[18] For more on Deepwater in Rhode Island, see http://www.ri.gov/press/view.php?id=7202

[19] The estimates here were developed using the U.S. Department of Energy National Renewable Energy Laboratory's (NREL's) Jobs and Economic Development Impact model or "JEDI". The spreadsheet-based wind model is intended to provide a high-level approximate estimate of the magnitude of the economic benefits

Can our three-phase development achieve the new federal objectives, and fulfill the political promises of "green jobs"? The results of the three-stage development we sketched out above are summarized in the chart below. Can we get to our targets from here? We believe we can.



Benefits of Regulated Competition

It should go without saying (but we will say it anyway) that this need for innovation is best met through competition. Relying on purely regulated, cost pass-through solutions is not likely to bring out the best innovations from what has become a globally competitive renewables business. Therefore, the Governors' letter proposes we revive the use of regulated procurements by utilities and state Authorities that lead to long-term power purchase agreements (PPAs).

> "Consider new market mechanisms such as regional procurements for renewable energy in the form of long-term power purchase agreements - again, allowing all renewable generation interests to compete on the basis of total cost of power delivered to load centers."

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associated with the development of wind projects on a county, state, and regional basis. NREL, "Job and Economic Development Impact (JEDI) Model: A User-Friendly Tool to Calculate Economic Impacts from Wind Projects", M. Goldberg, K. Sinclair, and M. Milligan, Preprint for presentation to the 2004 Global Windpower Conference, Chicago, IL, March 29-31, 2004. Available on the DOE Energy Efficiency and Renewable Energy web-site at www.eere.energy.gov/windandhydro/windpoweringamerica/filter_detail.asp?itemid=707

In order to get the best deal for consumers and the maximum benefit for the environment, however, PPAs need to be awarded on a competitive basis. In short, there should be regulated competition.

In New England, PPAs fell out of favor when we began our experiment in electricity restructuring. That experiment gave rise to a number of market mechanisms (now including "RECs" or renewable energy certificates) that do a good job of pointing out the immediate value of shortages and surpluses in the power sector. Thus, there is an over-the-counter market for quarterly and annual REC products. There are also periodic auctions for similar carbon allowance products (under the Regional Greenhouse Gas Initiative) that tell us the cost of non-compliance with New England's nascent, but growing, environmental requirements.

Useful as they are for immediate purposes, RECs and carbon allowances provide only limited support to the financing of wind, transmission, and other green energy projects. With the decline in liquid financial markets in the power sector, investment capital is no longer widely available for merchant infrastructure projects that rely upon revenues from short-term energy commodity markets. Whatever their merits in the past, current investment conditions clearly mean that long-term PPAs need to come back to the fore. In New York, the state's public power Authorities have shaped the power market by selecting the Neptune and Hudson transmission projects through a highly competitive PPA procurement processes. In Connecticut, the state has requests for proposals to invigorate a competitive process for procuring desired electric assets. Similarly, Maine and Massachusetts have recently expanded the legal authority for long-term contracts to promote the development of new energy investments as well.

In these competitive procurements, the chances of getting "best practices" are far better: Neptune (the 660 MW independent transmission project selected by the Long Island Power Authority that went online in 2007), for example, was developed on-budget and on-schedule. Non-competitively awarded transmission projects, in contrast, typically come in behind schedule, well above budget, and with consumers unknowingly picking up the extra tab.

In New England, a recent proposal by Northeast Utilities and NStar to use a PPA to finance a multi-billion dollar transmission-plus-hydroelectric project (that they, themselves, would own along with Hydro Québec) is an innovative step in the right direction.[20] States now need to open this concept to competition from others. There are wind, transmission, and renewable developers in New England that believe they can do a better job to meet New England's energy and environmental objectives, and consumers deserve to hear from them.

Can we meet New England's ambitious renewables objectives, create domestic jobs, build a domestic renewables industry, and protect ratepayers from exposure to cost overruns? Yes we can, but only if we harness the best of regulation and competition. A renewables development plan, such as the one laid out here that uses an open and competitive process leading to long term PPAs overseen by state and federal regulators, can get the job done.

[20] Docket No. EL09-20-000

Appendix

Alternative Compliance Payments under Massachusetts RPS

Massachusetts first passed legislation on the Renewable Portfolio Standard (RPS) in 1997. Since then, the RPS has gone through some changes, including ramping up the percent of renewables required. In 2008 the Green Communities Act (GCA) increased the RPS requirement by 1% per year beginning in 2009. As a result, the Massachusetts RPS will now reach 15% by 2020. The Green Communities Act also created provisions to increase the rate of renewable energy development in the state by requiring utilities to form 10 to 15-year long-term contracts with renewable resources. This provision will facilitate power purchase agreements with renewable developers that need the contracts to secure financing in the development process.

In 2009, electric distribution companies met 4% of their annual energy sales with renewable resources. Companies that cannot meet the RPS requirement with Renewable Energy Credits (REC) purchased in New England had to pay Alternative Compliance Payments (ACP) for the amount of energy not met with RECs. That money goes to the Massachusetts Technology Collaborative to fund further development of renewable energy in Massachusetts. Energy providers and wholesale consumers that do not self-supply or directly contract for enough renewable energy to comply with the annual standard may meet the obligation with the ACP. In 2008, the ACP was $58.58/MWh for each MWh of a customer's renewable energy shortfall. This payment changes each year with an inflation adjustor linked to the Consumer Price Index and is projected to be above $80.00/MWh by 2020. The Massachusetts Technology Collaborative's Renewable Energy Trust invests the proceeds into developing qualified renewable energy projects.

Can Massachusetts Meet RPS with RECs?

With RPS requirements increasing one percent per year through 2020 and the difficulty associated with developing new renewable resources within New England, the likelihood that electric suppliers will need to make ACPs in order to meet RPS is strong and increases over time. Massachusetts renewable energy supply will lag behind demand and is likely to fall increasingly short of requirements, in part because all New England states will compete for renewable resources. In theory, Massachusetts could meet RPS requirements if all New England resources that can reasonably be developed were committed to Massachusetts only. In practice, other states, including Connecticut (which uses 42% of the region's electricity), will compete for REC contracts as well.

In fact, all the states will be scrambling to fulfill RPS requirements with actual purchases of renewable energy from within New England. The ISO-NE Regional System plan for 2009 projects that renewable energy production within New England could fall short of aggregate RPS requirements as soon as 2012. If 20% of projects in the ISO-NE Interconnection Queue get built (a percentage roughly consistent with experience), demand for renewable power will surpass production in 2012. If 40% of the projects are completed, supply will fall short of requirements in 2014. In the best case scenario that 60% of projects in the queue make it to the finish line, renewable energy demand will surpass supplies in 2016.

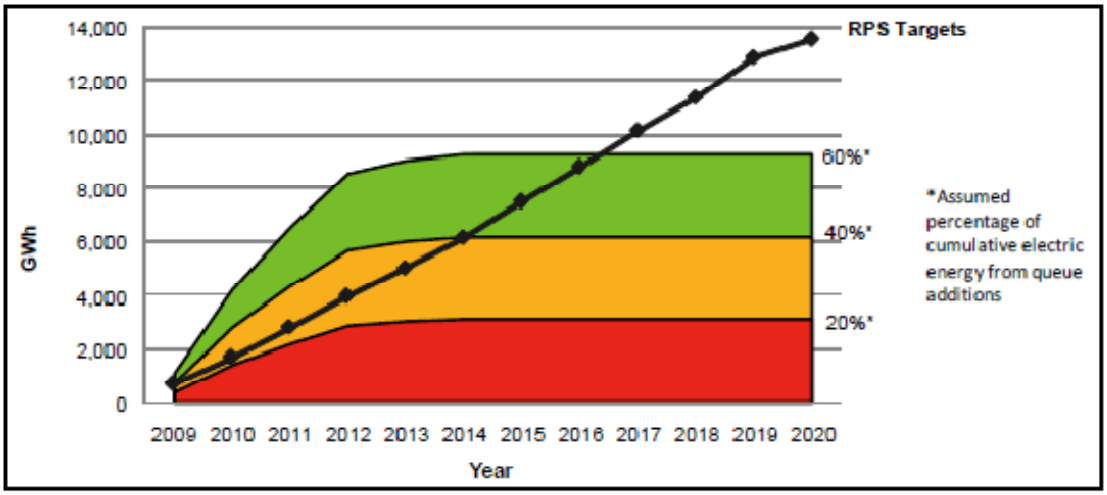


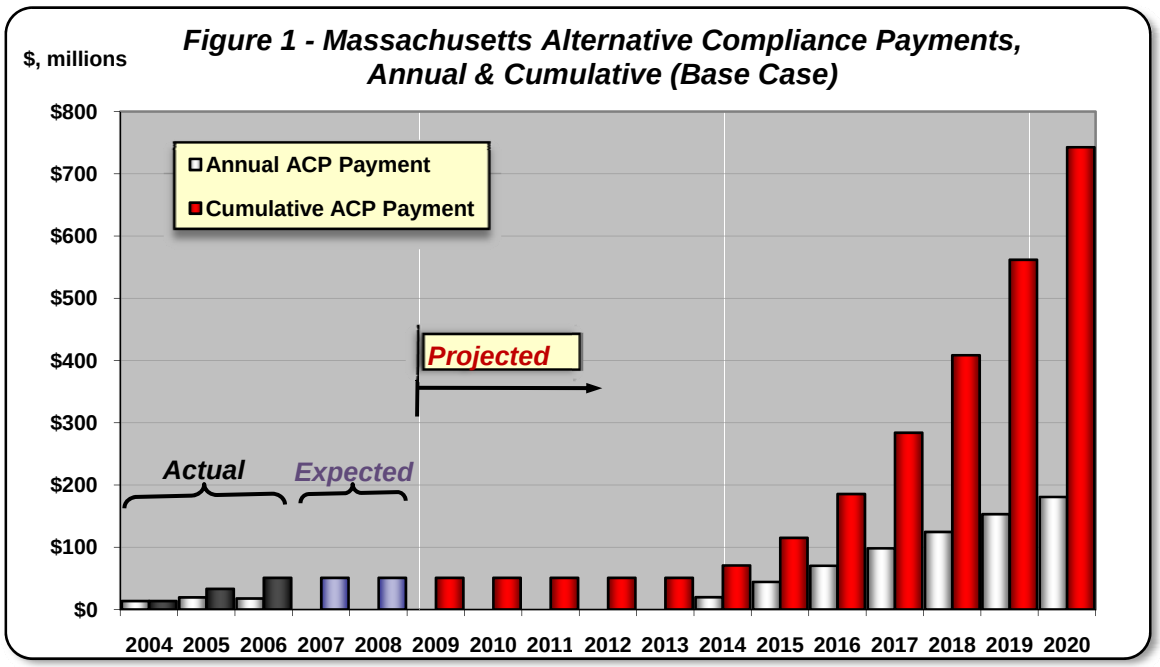
Figure 7-5: Various levels of cumulative electric energy estimated from new renewable projects in the ISO queue compared with RPS demand by year.

Notes: Various percentages of electric energy availability from queue projects have been assumed and are not projections of the projects' expected energy production. RPSs also can be met with projects behind the meter, imports, new projects not in the queue, and Alternative Compliance Payments.

[21]

As a result, Massachusetts ratepayers can expect to pick up the bill for unmet RPS compliance. In a study run by Energy Security Analysis, Inc., the Base Case expected growth scenario Alternative Compliance Payments in Massachusetts will approach $750 million by 2020. Under the Declining Growth scenario, Alternative Compliance Payments will reach $340 million by 2020. Annual payments to the Renewable Energy Trust by 2020 will be between $63 and $180 million per year. (See Figure 1 below). Even if renewable energy generation additions were doubled from ESAI's projections of 300 MW per year of wind equivalent resources to 600 MW per year, New England would still fall short of Renewable Energy Credits in 2020 by over 2.5 million MWh.

[21] Regional System Plan 2009, ISO New England



As a result of the economic decline in 2007-2009, load growth projections for the immediate future have be scaled down. Load is not expected to grown again until 2011. Even in this scenrio, by 2014 the demand for RECs has caught up the supply of RECs available in New England. The deficit escalates after 2015 as fewer banked RECs are available each year and the required percentage of RECs increases annually to reach 15% by 2020.

Redeployment of Funds

Funds received as Alternative Compliance Payments will go to the Mass Technology Collaborative and the Renewable Energy Trust where they will be redirected into renewable project development. Under the Green Communities Program the money may be used for grants or financial incentives to help municipalities achieve energy efficiency improvements or create renewable energy projects on municipally-owned land. The same provision allows the money to go to state or community colleges for renewable projects and educational programs.

Since 2003, a total of $51,005,172 has been paid into the Alternative Compliance Fund. The Renewable Energy Trust manages the ACP funds. One project, Commonwealth Solar, received $22 million in rebates for 539 projects totaling 7.2 MW of energy in its first year. The state estimates that the Commonwealth Solar program will create 27 megawatts (MW) of PV projects over the next four years.[22] As of August 2008, the Renewable Energy Trust had installed 19 MW of projects including biomass conversion, fuel cell, hydroelectric, landfill gas, photovoltaic, and wind energy projects.[23] The Five-year plan includes 94MW of capacity in the pipeline. For each of the next five years the RET plan budget

[22] Press Release, February 06, 2009 Commonwealth Solar Rebate Program Hits One-Year Mark with Resounding Success - http://www.mass.gov/?pageID=eoeeapressrelease&L=1&L0=Home&sid=Eoeea&b=pressrelease&f=090206_pr_solar_first&csid=Eoeea

[23] Massachusetts Renewable Energy Trust 5-Yr Strategic Plan F09-F13. http://www.masstech.org/renewableenergy/reports/TrustStrategicPlan.pdf

includes from $47.5 million to $31.9 million allocated to renewable projects in state. Alternative Compliance Payments will contribute substantially to this development budget.